Solvent Recovery System (ZEN DISTILLATION)

Date: 19th JULY 2025

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ZEN DISTILLATION COLUMNS

1. **ZEN Existing Operation Requirement. (400 KL Output/month)**

2. **ZEN Proposed Operation Requirement. (1400 KL Output/month)**

ZEN DISTILLATION EQUIPEMNT DETAILS			
S.No.	PARTICULARS	EXISTING SYSTEM	ZEN PROPOSED
1	INPUT/OUTPUT (KL)	600/400	2000/1400
2	COLUMNS	900 dia- 4 No's	0
		700 dia- 1 No's	0
		650 dia- 1 No's	0
		600 dia- 3 No's	0
		450 dia- 1 No's	0
3	KETTLES/ REACTORS	17 KL-2 No's	0
		20 KL-1 No'	0
		15 KL-2 No's	0
		8 KL-2 No's	20 KL-2 No's (kettle)
		1.5 KL - 1 No'	15 KL-1 No' (kettle)
		3 KL-1 No' (Reactor)	15 KL-1 No' (Reactor)
		10 KL-1 No' (Reactor)	20 KL-1 No' (kettle)
4	PRETREATMENT	8 KL-2 No' (Reactor)	15 KL-2 No' (Reactor)
		10 KL-2 No' (Reactor)	8 KL-1 No' (Reactor)
5	STORAGE TANKS	24	60
6	COOLING TOWER	500 TR (6 Columns)	To be calaculated
		660 TR (4 Columns)	To be calaculated
7	STORAGE TANKS PUMPS	19 No's (10 m³/hr)	35 No's
8	PIPE LINES		3" / 2" / 1 1/2"
9	CONDENSERS	900 dia- 4 No's - 30 m² 2 No's, 50 m² 2 No's	To be calaculated
		700 dia- 1 No's - 30 m²	
		650 dia- 1 No's - 40 m²	
		600 dia- 3 No's - 30 m²	
		450 dia- 1 No's - 12 m²	

ZEN EXISTING OPERATION REQUIREMENT

S.#	Block	Column No.	Column Details			
			Diameter	Height	Kettle	Reactor
			mm	Mt.	KL	KL
1	ZDTP Block	#01	Ø900	13.5	17	--
2		#02	Ø900	13.5	17	--
3		#03	Ø650	15	15	--
4		#04	Ø600	15	8	--
5		#05	Ø600	15	8	--
6		#06	Ø600	12	15	6
7	OCPA Block	#07	Ø450	15	--	3
8		#08 (Contineous)	Ø700	15	1.5	--
9		#09	Ø900	13.5	--	10
10		#10	Ø900	13.5	20	--

ZEN PROPOSED OPERATION REQUIREMENT

S.#	Block	Column No.	Column Details				Remarks
			Diameter	Height	Kettle	Reactor	
			mm	Mt.	KL	KL	--
1	ZDTP Block	#01	Ø900	13.5	17	--	
2		#02	Ø900	13.5	17	--	
3		#03	Ø650	15	15	--	
4		#04	Ø600	15	8	--	To be change to 20 KL Kettle
5		#05	Ø600	15	8	--	To be change to 20 KL Kettle
6		#06	Ø600	12	15	6	
7	OCPA Block	#07	Ø450	15	--	3	To be change to 15/20 KL Kettle
8		#08 (Contineous)	Ø700	15	1.5	--	
9		#09	Ø900	13.5	--	10	To be change to 20 KL Kettle
10		#10	Ø900	13.5	20	--	

ZEN PROPOSED OPERATION REQUIREMENT

Maximum Distillation Capacity of the Plant as per Zen						
S.#	Block	Column	Solvent	Maximum Capacity		Remarks
				Input (KL/Month)	Output (KL/Month)	
1	ZDTP	#01	MDC	200-220	150-170	
2		#02	THF/ Toluene	200	180	
3		#03	Ethyl Acetate	170	110	
4		#04	Methanol	220	160	
5		#05	Multi Purpose	220	170	
6		#06	PET Ether/Multi purpose	170	120	
7	OCPL	#07	Multi Purpose	160	130	
8		#08	EA+Acetone/	200	~195	Contineous column.
			IPA+Toluene			I/P & O/P not considered.
9		#09	High Boil (DMF)/ Multi purpose	220	170	
10		#10	Acetone	200	160	
Total Distillation Capacity				**1800**	**1300**	**KL/Month**
				2000	**1400**	**KL/Month**

ZEN EXISTING OPERATION REQUIREMENT

1. Boiler operation requirements.

a) Boiler descaling

b) Boiler bag filters- 40 No’s required.

c) Boiler ID duct welding.

d) Boiler main valve 100 NB to be replaced.

e) PRV bypass 3 inch valve required.

f) Softener water stand by pump required.

g) Boiler feed Husk required.

h) Ash removal planning.

i) Boiler required level glass & valves.

j) Sand Required for Boiler.

ZEN EXISTING OPERATION REQUIREMENT

2. Cooling Tower for 6 Columns:

a) 250 TR 2 No’s Cooling tower cleaning & process lines cleaning.

b) 6 Columns Condensers decaling.

c) Cooling tower 15 HP motor pump seal leakage

d) Cooling tower tank & surroundings civil work to be done.

3. Cooling Tower for 4 Columns:

a) 660 TR Cooling tower cleaning & process lines cleaning.

b) 4 Columns Condensers decaling.

c) Cooling tower 20 HP motor 2 No’s pumps seal leakage.

d) Cooling tower chemicals required.

e) Cooling tower tank & surroundings civil work to be done.

ZEN EXISTING OPERATION REQUIREMENT

4. Column Operations requirement:

a) 10 Columns Rotameters required.

b) Column building civil work to be done.

c) Storage tank platform flooring work to be done.

e) 2 inch SS hose pipes 3 meters 6 No’s required.

f) Nitrogen & instrument air lines servicing.

g) Scrubber system pumps & pipe lines required.

h) Column-03 IPA dry purpose 2 KL Reflux Drum required.

i) N2, H2 & O2 Cylinder vendors.

j) Diesel required for DG.

K) Condensate pumps required.

l) Painting work to be done.

m) M.E & ETP manpower required.

n) Columns manpower required.

o) 20 KL MS tank nozzle welding required.

ZEN EXISTING OPERATION REQUIREMENT

5. Raw Material Required for pretreatment process:

a) CS flakes

b) Ferrous sulfate

c) H_2SO_4

d) $CaCl_2$

e) HCl

f) NaCl

g) Sodium bicarbonate

ZEN EXISTING OPERATION REQUIREMENT

6. Available Manpower-63 No’

- Production Shift In charges: 08 No’s
- Production Sr. & Jr. Chemists: 07 No’s
- Warehouse & Accounts: 02 No’s
- Electrical & Maintenance: 04 No’s
- Safety: 0
- HR : 0
- ME: 1 No.
- Housekeeping: 6 No’s
- R & D : 1 No.
- QC: 0
- Boiler: 6 No’s
- Production Helpers: 19 No’s
- Boiler Helpers: 9 No’s

ZEN EXISTING OPERATION REQUIREMENT

7. Safety Requirements:
    a) Column vent connections to dump tank
    b) Reboiler SRV
    c) Equipment Body Earthing.
    d) MCB trip ELCB.
    e) Jumper
    f) Stand by pumps
    g) Steam interlocking system
    h) Double earthing interconnectivity.
    i) Overflow control
    j) Dyke system
    k) Fire hydrant ring
    l) Lightening arrestors
    m) Hand railing
    n) Floor Openings

THANK YOU!

MSN TEAM

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